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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/976,462	10/12/2001	Akira Matsumoto	939_030	9975

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EXAMINER

LAVARIAS, ARNEL C

ART UNIT PAPER NUMBER

2872

DATE MAILED: 02/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/976,462

Applicant(s)

MATSUMOTO ET AL.

Examiner

Arnel C. Lavarias

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2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 January 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 13 January 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 1/13/03 in Paper No. 9 have been approved.

Response to Amendment

2. The submission of the substitute specification in Paper No. 10, dated 1/13/03, acknowledged and accepted.
3. The amendments to Claims 1-8 in Paper No. 11, dated 1/13/03, is acknowledged and accepted.
4. The addition of Claims 10-11 in Paper No. 11, dated 1/13/03, is acknowledged and accepted.
5. The amendments to the abstract of the disclosure in Paper No. 11, dated 1/13/03, is acknowledged and accepted.

Response to Arguments

6. In view of the amendments made to the specification, drawings, and the claims, the objections to the specification, drawings, and claims, and the rejection of Claim 6 under 35 U.S.C. 112, second paragraph, are respectfully withdrawn.
7. The Applicants argue that Ichiki et al. fails to teach or reasonably suggest an end face of the peripheral adhesive being recessed no more than 10 μm with respect to an end face

of the fiber, as recited in newly amended Claim 1. The Examiner agrees, and respectfully withdraws the rejections to Claims 1 and 5 under 35 U.S.C. 102(b) to Ichiki et al.

8. The Applicants argue that Hirai et al. fails to teach or reasonably suggest an end face of the peripheral adhesive being recessed no more than 10 μm with respect to an end face of the fiber (i.e. the deficiency of of Ichiki et al.), as recited in newly amended Claim 1. The Examiner disagrees. It is specifically stated in the Office Action in Paper No. 8, dated 10/22/02, that Hirai et al. discloses the peripheral adhesive being recessed about 10 μm from the end face of the fiber, with specific reference being made to Page 10, lines 38-47 and Page 4, line 56-Page 5, line 6 of the Hirai et al. reference. Although Ichiki et al. lacks this recited limitation, Hirai et al. does not, and Ichiki et al. is being relied upon for teaching a fiber fixing substrate fixing the stripped fibers in a fiber array, which is the admitted deficiency of Hirai et al.

Allowable Subject Matter

9. The indicated allowability of Claims 2 and 4, as well as newly added Claims 10-11, is withdrawn in view of the reference(s) to Hirai et al. and Ichiki et al. Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1, 3, 5-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirai et al. in view of Ichiki et al.

Hirai et al. discloses a fiber array (See Figures 8 or 9) housing a stripped fiber (See 10 in Figures 8 or 9) in a V-groove (See Page 10, lines 38-47; Figures 8 or 9) of a V-groove substrate (See 4 or 5 in Figures 8 or 9) comprising a peripheral adhesive (See 11 in Figure 8; Page 7, line 45-Page 9, line 18; Page 10, line 25-Page 11, line 30) disposed around the stripped fiber; wherein an end face of the peripheral adhesive is recessed with respect to an end face of the fiber (See Page 10, lines 38-47). Hirai et al. additionally discloses that the peripheral adhesive is recessed about 10 μm from the end face of the fiber (See Page 10, lines 38-47; Page 4, line 56-Page 5, line 6), allowing the fiber end face to protrude from the fiber array. Hirai et al. also discloses that peripheral adhesive having a Young's modulus of at least 0.03 GPa (or 3.059 kgf/mm²) (See Table 1 on Page 9), and an optical device being connected or fixed to the fiber array (See 1c in Figures 8 or 9). Hirai et al. lacks a fiber fixing substrate fixing the stripped fiber. However, Ichiki et al. teaches a fiber array (See Figures 3, 4, 5, or 9) housing a stripped fiber (See 42 in Figures 3, 4, 5, or 9) in a V-groove (See 30 in Figures 3, 4, 5, or 9) of a V-groove substrate (See 22 in Figures 3, 4, 5, or 9) comprising a fiber fixing substrate (See 24 in Figures 3, 4, 5, or 9) fixing the stripped fiber; a peripheral adhesive (See 60 in Figures 3, 4, 5, or 9) disposed around the stripped fiber; wherein an end face of the peripheral adhesive is recessed with respect to an end face of the fiber. Ichiki et al. also discloses the end face of the fiber being flush with the end face of the fiber array (See Figure 3, 4,

or 5) or protrudes therefrom (See Figure 9). In particular, Ichiki et al. teaches a fiber fixing substrate (See 24 in Figures 3, 4, 5, or 9) fixing the stripped fiber onto the V-groove substrate. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a fiber fixing substrate to fix the stripped fibers, as taught by Ichiki et al., in the fiber array as disclosed by Hirai et al. One would have been motivated to do this to provide protection and mechanical stability for the fibers placed in the V-grooves.

12. Claims 2, 4, 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirai et al. in view of Ichiki et al.

Hirai et al. in view of Ichiki et al. discloses the invention as set forth above, except for the recess depth x that the end face of the peripheral adhesive is recessed with respect to the end face of the fiber being related to a water absorption ratio ϕ of the peripheral adhesive and a length L over which the optical fiber is adhered to the V-groove by the equation $x = \frac{0.1(\phi L)}{2}$. However, Hirai et al. teaches using a peripheral adhesive that is a thermosetting acrylate resin or a thermosetting epoxy resin (See Page 8, line 54-Page 9, line 18 of Hirai et al.) that is similar in structure, function, and properties to the thermosetting or UV curable epoxy resin used in the instant application (See Page 2, lines 22-23; Page 9, line 13-15 of the instant application). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made for the recess depth x that the end face of the peripheral adhesive is recessed with respect to the end face of the fiber to be related to a water absorption ratio ϕ of the peripheral adhesive and a length L over which the optical fiber is adhered to the V-groove by the equation

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$x = \frac{0.1(\phi L)}{2}$ since such mathematical formulation of the recess depth with length and water absorption ratio is easily performed by one skilled in the art using experimental and/or simulated data collected from the fiber array.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 703-305-4007. The examiner can normally be reached on M-F 8:30 AM - 5 PM.

The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.



Arnel C. Lavarias
February 14, 2003

